VRO-AIR-015-10

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
VALLEY REGIONAL OFFICE
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February 17, 2010

Mr. Robert B. McKinley
Vice President, Generation Construction
Virginia Electric and Power Company
5000 Dominion Boulevard
Glen Allen, Virginia 23060

CERTIFIED MAIL/RETURN RECEIPT REQUESTED

Facility: Warren County Plant
Location: Warren County
Registration No.: 81391
Plant ID No.: 51-187-0041

Re: Initial PSD Air Permit Application

Dear Mr. McKinley:

This letter acknowledges receipt of your permit application dated January 18, 2010 and received by this office January 19, 2010. It is our understanding that the current permit (formerly CPV-Warren facility), dated September 9, 2009, for a combined cycle electric power generating facility located in Warren County will be superseded by the permit, if issued, corresponding to the proposed application. The Valley Regional Office (VRO) of the Department of Environmental Quality (DEQ) has completed its initial review of your request to construct and operate a combined-cycle combustion turbine electric generating facility in Warren County, Virginia using one of three turbine options – Siemens, Mitsubishi, or General Electric. Based on the VRO staff's initial determination, your facility is subject to the Prevention of Significant Deterioration (PSD) permitting requirements in 9 VAC 5 Chapter 80, Article 8 of the Commonwealth of Virginia Regulations for the Control and Abatement of Air Pollution for nitrogen oxides (NO_x), particulate matter equal or less than 10 μm (PM_{10}), particulate matter

equal or less than 2.5 μm ($PM_{2.5}$), carbon monoxide (CO), volatile organic compounds (VOC), and sulfuric acid (H_2SO_4). Due to the facility's location within 10 km of the Shenandoah National Park (SNP), other pollutants may be subject to PSD permitting if emissions cause an impact greater than 1 $\mu g/m^3$ in the SNP.

Your permit application does contain sufficient information to begin the application review process. However, additional information is needed before processing may continue and before the application will be considered complete. Please provide the following:

- Applicable 40 CFR 63 NESHAPs – Section 4.6 states that potential hazardous air pollutant (HAP) emissions will be below major source thresholds for single and combined HAPs and thus, 40 CFR 63 Subpart ZZZZ (Stationary Reciprocating Internal Combustion Engines) is not applicable. However, Subpart ZZZZ also applies to area sources of HAP emissions. Therefore, 40 CFR 63 Subpart ZZZZ does apply to the emergency generator and fire water pump.

- Proposed BACT NO_x Emission Rate – Section 5.2.1.3 of the application states that BACT for NO_x for the proposed combustion turbines is the use of natural gas with dry low NO_x burners and selective catalytic reduction with the proposed emission rate of 2.0 ppmvd @ 15% O_2 as a 3-hour rolling average with or without duct burning. The current permit requires a 1-hour average for the short-term NO_x emission limit. Like the previous BACT determination for the GE and Siemens engines for this facility, several combustion turbines listed on EPA's RACT/BACT/LAER Clearinghouse are required to meet a 2.0 ppmvd limit calculated as a 1-hour average. Please review and provide an analysis of the proposed averaging time for the NO_x emission rate.

- Proposed BACT Emission Rates – Table 5-1 of the Siemens application summarizes the BACT emission rates for the proposed Siemens SGT6-5000F combustion turbines. The proposed Siemens turbines are the same model as those in the current permit. Please explain why the proposed BACT short term emission rates listed in Table 5-1 are higher than the emission rates established in the current permit for PM_{10}, CO, and VOC.

- Facility Load and Proposed BACT Emission Rates – The application suggests that the minimum load the facility will be operating at is 60% (except GE which will be operating at 50% based on the additional information dated February 11, 2010). Please note that if the facility will be operating at a load less than the load indicated in the application, emission information for such additional load scenarios should be provided. Section 5.2.2.3 and Table 5-1 gives two emission rates for CO without duct burning – one rate above 60% load and another rate for at 60% load. Please discuss why there are two emission rates for CO based on facility load but all other pollutants only have one emission rate across all loading scenarios.

- Combustion Turbines and Toxic Air Pollutant Standards – Section 9.3 of the application states that the proposed electric generating units are not subject to the toxic pollutant standards in 9 VAC 5-60-300 per the exemption listed in 9 VAC 5-60-300 C.7. The

Regulations state that the Toxics Rule does not apply to "a generator or boiler that burns only natural gas, #2 fuel oil, #4 fuel oil, #6 fuel oil, propane, or kerosene." The proposed combustion turbines are considered neither a generator nor a boiler by definition. Therefore, the combustion turbines are subject to the toxic pollutant standards in 9 VAC 5-60-300.

- Toxic Air Pollutant Modeling Analysis – Section 9.3 of the application states that Table 9-4 contains a listing of the potential HAP emissions for the proposed project and these emissions are compared to the toxic pollutants thresholds for modeling applicability. It appears that Table 9-4 only includes toxic emissions from the Fuel Gas Heater and the Emergency Firewater Pump. Per 9 VAC 5-60-350 C, any modeling analysis "shall include all emissions from the stationary source, including those from sources exempted under 9 VAC 5-60-300 C." Therefore, Table 9-4 needs to be updated to include all toxic pollutant emissions from the proposed project. These totals should then be compared to the toxic pollutant exemption levels to determine modeling applicability for each pollutant. Also, the majority of the toxic exemption levels listed in Table 9-4 is incorrect and N/A is listed for several pollutants although there are established exemption thresholds for these pollutants. Please correct the table and reevaluate whether a modeling analysis is required for each toxic pollutant.

- Control of Volatile Toxic Compounds - Section 5.2.3.3 and Table B-2 shows a 30% reduction in VOC from the combustion turbines based on control by the oxidation catalyst. The controlled and uncontrolled emission rates for toxic pollutants listed on page 16 of the Form 7 application are the same. Dominion can also apply the 30% reduction to the volatile toxic compounds from the combustion turbines.

- Modeling Protocol and Modeling Analysis – A modeling protocol review by the DEQ Air Quality Assessments Group (AQAG) was sent to Dominion via e-mail on February 2, 2010. This review provided comments to the initial modeling protocol dated January 2010 and received January 11, 2010. A response to comments on the modeling protocol dated February 11, 2010 and a revised protocol dated February 2010 was received by DEQ on February 15, 2010 via e-mail. The modeling included with the initial application and the revised modeling received February 2, 2010 will not be reviewed at this time. Once the protocol is approved by DEQ AQAG, revised modeling per the approved protocol should then be submitted.

- Emissions Based on Startups, Shutdowns, and Duct Burning – Tables B-3 and B-4 provide the emissions based on various startup, shutdown, and duct burning operating modes. How were the numbers of events (startup, shutdown, and offline) decided upon? How can there be half an event (i.e. 174.5 hot starts)? Please discuss how the operating hours with and without duct burning was determined and how a change in duct burning operating hours and the number of startup and shutdown events will affect the projected worst-case emissions. The permit may need to contain an enforceable condition to limit the startup, shutdown, and offline events to the numbers listed in Table B-3.

- Definitions of Startups and Shutdown – Please provide the definitions of startups (hot, warm, and cold) and shutdown.

- Formaldehyde Emissions from Combustion Turbines – Table B-5 lists note (g) as 25 ppbvd at 15% O_2 based on information provided by GE for dry low NOx combustion as the emission factor for formaldehyde for all three turbine manufacturers. Please provide documentation and emissions calculations for the formaldehyde emissions from each turbine.

- Auxiliary Boiler Emissions – Section 3.2.1 and Table B-6 lists operating hours per year of the auxiliary boiler as 8,760 hours. However, note (e) under Table B-6 states "operation limited to the equivalent of 4000 hours at maximum firing capacity." Please review and revise accordingly.

It is important that you provide the requested information above so that the engineering staff can complete the review of your application in a timely manner. Please note that a signed and dated Document Certification Form (page 1 of Form 7) must accompany the submittal. A review of the details of your BACT analysis is ongoing and additional information may be requested once that review is completed. If a later analysis of the permit application indicates that additional information is required to support your application, such information will be requested at that time.

Please note that in accordance with 9 VAC 5-80-1870, Virginia Electric and Power Company is required to notify the public about the proposed project and to conduct an informational briefing in the locality where the plant will be constructed. The notice must be approved by VRO and must be published within 30 days of your receipt of this letter. The briefing must be held at least 30 days but no later than 60 days following the day of publication of the notice.

You are reminded that construction of a source subject to permitting requirements in 9 VAC 5 Chapter 80 of the Virginia Regulations for the Control and Abatement of Air Pollution without a permit may result in enforcement action.

If you have any questions or require assistance, please call me at (540) 574-7852 or send electronic mail to anita.riggleman@deq.virginia.gov.

Sincerely,

Anita Riggleman

Anita Riggleman
Environmental Engineer Senior

c: Gerallyn Duke – U.S. EPA, Region 3 (with application attachment)

Andrea Stacy – National Park Service (with application attachment)
Edward (Tedd) Huffman – U.S. Forest Service (with application attachment)
Martha Bogle, Shenandoah National Park
Maureen Hyzer, George Washington and Jefferson National Forests
Jim Schaberl – National Park Service (via email)
Andy Gates – Virginia Electric and Power Company
Bill Campbell – AECOM, Inc.
Mike Kiss – DEQ, Central Office (via email)
VRO – File